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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/620,162	07/20/2000	Thomas H. Baum	249-Div.	2598

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EXAMINER

MARKHAM, WESLEY D

ART UNIT	PAPER NUMBER
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1762

8

DATE MAILED: 05/09/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/620,162

Applicant(s)

BAUM ET AL.

Examiner

Wesley D Markham

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 March 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 and 27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-22 and 27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 July 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Acknowledgement is made of applicant's amendment C, filed as paper #6 on March 22, 2002, in which the specification of the instant application was amended, Claims 1 – 22 were amended, and Claim 27 was added. Claims 1 – 22 and 27 are currently pending in U.S. Application Serial No. 09/620,162, and an Office Action on the merits follows.

Claim Objections

1. The objection to Claim 15, set forth in paragraph 1 of the previous Office Action, is withdrawn in light of applicant's amendment C.
2. Claim 6 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Specifically, amended Claim 1 (from which Claim 6 depends) contains all the limitations that are recited in Claim 6, and therefore Claim 6 does not further limit Claim 1.
3. Claims 14 and 27 are objected to because of the following informalities:
 - Claim 14 – The phrase, "...a mixture of β -diketonate compound selected from the group..." appears to contain a typographical error. The applicant is suggested to amend the phrase to read, "...a mixture of β -diketonate compounds selected from the group..."
 - Claim 27 – The phrase, "...Curie temperature above 273° K" appears to contain a typographical error and is missing a period at the end of the

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sentence. The applicant is suggested to amend the phrase to read, "... Curie temperature above 273 K₂", as temperature values reported in Kelvin do not require a degree (°) symbol.

Appropriate correction is required.

4. Applicant is advised that should Claims 17, 19, and/or 21 be found allowable, Claims 18, 20, and/or 22, respectively, will be objected to under 37 CFR 1.75 as being a substantial duplicate(s) thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k). Specifically, as Claims 17, 19, and 21 depend from Claim 1, these claims necessarily contain the limitation that the A-site deficient stoichiometry has a lower limit of 0.5, and therefore Claims 18, 20, and 22 (which explicitly state that the A-site deficient stoichiometry has a lower limit of 0.5) are duplicates (i.e., cover the same thing) of Claims 17, 19, and 21, respectively.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

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6. The rejection of Claim 6 under 35 U.S.C. 112, first paragraph, set forth in paragraph 3 of the previous Office Action, is withdrawn in light of applicant's amendment C.
7. Claim 27 is rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Specifically, Claim 27 recites that the manganate material "has a Curie temperature above 273 K". This limitation is open-ended. In other words, as written, new Claim 27 encompasses manganate materials having any Curie temperature above 273 K (e.g., 400 K, 1000 K, etc.). While the examiner acknowledges that the applicant had possession of manganate materials having various Curie temperatures above 273 K (see, for example, Table II), the applicant did not have possession of manganate materials having any Curie temperature above 273 K, which is the subject matter encompassed by new Claim 27. Therefore, Claim 27 contains new matter.
8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
9. The rejection of Claims 1 – 22 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention, set forth in paragraphs 5 – 7 of the previous Office Action, is withdrawn in light of applicant's amendment C.

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10. Claim 27 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Specifically, the term "thin" in Claim 27 is a relative term that renders the claim indefinite. The term "thin" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. It is unclear how "thin" the film must be to qualify as a "thin film" as claimed by the applicant.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

13. The rejection of Claims 1 – 4 and 6 – 18 under 35 U.S.C. 103(a) as being unpatentable over Li et al. (USPN 5,487,356), set forth in paragraphs 8 – 11 of the previous Office Action, and the rejection of Claim 5 under 35 U.S.C. 103(a) as being unpatentable over Li et al. (USPN 5,487,356) in view of Vaartstra (USPN 6,010,969) and Biagini et al. (USPN 5,659,101), set forth in paragraphs 12 – 13 of the previous Office Action, are withdrawn in light of applicant's amendment C. Specifically, the examiner acknowledges that Li et al. do not explicitly teach depositing an A-site deficient manganate material that has an "A-site filling value" (i.e., applicant's "x + y" value) of greater than 0.5 and less than 0.9.
14. Claims 1 – 4, 6 – 22, and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Li et al. (USPN 5,487,356) and Munakata et al. (USPN 6,060,420).
15. Regarding amended independent Claim 1, Li et al. teach the applicant's claimed method (i.e., liquid delivery and flash vaporization CVD) for depositing manganate films having the general formula $(La_{1-x}A_x)MnO_3$, wherein A is selected from the group consisting of Ba, Ca, Mn, and Sr (Abstract) (i.e., films identical to the films claimed by the applicant except for the A-site deficiency (i.e., an "x + y" value of greater than 0.5 and less than 0.9)) (see paragraphs 10 and 15 of the previous Office Action). In addition, Munakata et al. teach / render obvious the applicant's claimed A-site deficient manganate materials. Specifically, Munakata et al. suggest

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an "A-site filling value" of as low as 0.8, which is within the applicant's claimed range of 0.5 to 0.9 (please see paragraph 15 of the previous Office Action and Col.3, lines 26 – 67 of Munakata et al.). It would have been obvious to one of ordinary skill in the art to form the A-site deficient materials of Munakata et al. using the CVD process of Li et al. with the reasonable expectation of (1) success, as Li et al. teach that materials having the general formula $(La_{1-x}A_x)MnO_3$ are successfully deposited by their method and that their method is most feasible for controlling film stoichiometry, and (2) obtaining the benefits of using the CVD method of Li et al., such as ease of scaling up to production runs, high control of key process variables, and high control of film stoichiometry.

16. Further, Li et al. also teach the specifics of the liquid delivery and flash vaporization CVD method (i.e., process variables, precursors, etc.) claimed by the applicant in Claims 2 – 4 and 7 – 16 (please see paragraph 11 of the previous Office Action)
17. As Claim 6 encompasses essentially the same material as independent Claim 1, Claim 6 is also rejected for the reasons set forth in paragraph 15 above.
18. Regarding Claims 17 – 22, Munakata et al. teach / render obvious the claimed A-site deficient manganate materials (i.e., (La + Ca), (La + Sr), and (La + Ba) manganate materials) as set forth (1) above in paragraph 15, (2) in paragraph 15 of the previous Office Action, and (3) in the abstract and Col.3, lines 26 – 67 of Munakata et al. It would have been obvious to one of ordinary skill in the art to form the A-site deficient manganate materials of Munakata et al. by the method of Li et al. for the reasons set forth in paragraph 15 above.

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19. The combination of Li et al. and Munakata et al. teaches all the limitations of new Claim 27 as set forth above in paragraph 15, except for a method wherein the manganate material has a Curie temperature above 273 K. Specifically, both Li et al. and Munakata et al. are silent as to the Curie temperature of the manganate material. However, the combination of Li et al. and Munakata et al. teaches all the process steps / limitations of the applicant's claims. In addition, Munakata et al. teach / render obvious the applicant's claimed A-site deficient manganate materials. Since the Curie temperature of a given material is simply a property inherent to the material, and the combination of Li et al. and Munakata et al. teaches all the process steps / limitations of the applicant's claims (including the A-site deficient manganate materials claimed by the applicant), the manganate materials of the combination of Li et al. and Munakata et al. would have inherently possessed the applicant's claimed Curie temperature values unless essential process steps / limitations are missing from the applicant's claims.
20. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Li et al. (USPN 5,487,356) and Munakata et al. (USPN 6,060,420), and in further view of Vaartstra (USPN 6,010,969) and Biagini et al. (USPN 5,659,101).
21. The combination of Li et al. and Munakata et al. teaches all the limitations of Claim 5 as set forth above in paragraph 15, except for a method wherein the precursor(s) include metal pivalate Lewis base adducts. However, utilizing this class of

precursors would have been obvious to one of ordinary skill in the art in light of Vaartstra and Biagini et al. for the reasons set forth in paragraph 13 of the previous Office Action.

Response to Arguments

22. Applicant's arguments filed on March 22, 2002 have been fully considered but they are not persuasive.
23. Applicant's arguments with respect to the rejections based on Li et al. alone and Li et al. in view of Vaartstra and Biagini et al. have been considered but are moot in view of the new ground(s) of rejection presented above.
24. In addition, the applicant appears to argue that the materials of Munakata et al. have a general formula that is not consistent with the applicant's claimed manganate materials. Specifically, the applicant notes that Munakata et al. teach making materials having the general formula $(A'_{1-x}A''_x)_{1-\alpha}(B'_{1-y}B''_y)O_{3-\delta}$, **wherein B' and B'' are different**. In response, this class of materials taught by Munakata et al. is simply one example of a preferred embodiment of their invention (see Col.1, lines 1 – 12). A broader recitation of the materials taught by Munakata et al. is provided on Col.3, line 55, in which the general formula $A_{1-\alpha}BO_{3-\delta}$ is given. "A" is at least one element selected from the group consisting of La, Ba, Sr, Ca, and a number of other metals (Col.3, lines 64 – 67). This teaching reasonably suggests utilizing any one of (La + Ba), (La + Sr), and (La + Ca) as component "A" in the material of Munakata et al. In addition, by choosing "B" to be Mn, " δ " to be 0, and " α " to be up to 0.2 (all of

which are embodiments contemplated by Munakata et al. – see Col.3, lines 58 – 63), the A-site deficient materials taught by Munakata et al. are equivalent to the A-site deficient materials claimed by the applicant. Further, the applicant also notes that the materials of Munakata et al. are formed by a different method than that claimed by the applicant. In response, it would have been obvious to one of ordinary skill in the art to deposit the materials of Munakata et al. using the method of Li et al. (i.e., the applicant's claimed liquid delivery and flash vaporization CVD method) for the reasons set forth above in paragraph 15. The examiner stresses that Li et al. teach that the CVD method is the most feasible for controlling film stoichiometry, and that control of film stoichiometry is clearly desired by Munakata et al. (see Col.3 of Munakata et al.).

25. In addition, the applicant argues that there is no motivation in the art to move in the direction of the applicant's claimed process for making magnetoresistive materials having a Curie temperature that is at or above room temperature. In response, the examiner has not asserted that it would have been obvious to make magnetoresistive materials having a Curie temperature that is at or above room temperature. Rather, the examiner has asserted that the materials reasonably suggested by Munakata et al. (and formed by the method of Li et al.) would inherently possess the applicant's claimed Curie temperature value(s), as the Curie temperature appears to be a property that is inherent to a given material, and Munakata et al. reasonably suggest the applicant's claimed manganate materials.

Conclusion

26. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).
27. A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.
28. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wesley D Markham whose telephone number is (703) 308-7557. The examiner can normally be reached on Monday - Friday, 8:00 AM to 4:30 PM.
29. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive Beck can be reached on (703) 308-2333. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

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30. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.



WDM
May 8, 2002

Wesley D Markham
Examiner
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